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Original Investigation

Nondaily, light daily, and moderate-to-heavy cigarette smokers in a rural area of Egypt: A population-based survey

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Abstract

Introduction: Understanding tobacco use among nondaily and light daily cigarette smokers is needed because they are dissimilar from other smokers and may require specific prevention efforts.

Method: We compared three groups of adult male smokers in rural Egypt: light daily and nondaily smokers versus moderate-to-heavy daily smokers. Data were obtained from a household survey in 2003 in six randomly selected villages in the Nile Delta region of Egypt. There were 7,657 adult participants, of whom 48.6% were male and 51.4% were female. Among them, 1,401 males (37.6%) and 5 females (0.1%) were self-identified as current cigarette smokers; further analysis focused on males. We restricted data analysis to those who reported a stable pattern of 3+ years of smoking. There were 42 nondaily smokers. Daily smokers were subdivided into two groups: light daily smokers (who smoked no more than 10 cigarettes/day; $n = 223$) and moderate-to-heavy daily smokers (who smoked at least 11 cigarettes/day; $n = 769$).

Results: We found statistically significant differences between these groups on nearly every measure: nondaily smokers tended to be younger and unmarried, but they also had higher levels of education and professional occupations compared with the other smokers. Nondaily and the light daily smokers were more likely than moderate-to-heavy smokers to be planning to quit and to have self-efficacy for quitting, and they were less likely to be smoking in the presence of their wife and children at home.

Discussion: Further understanding of nondaily and light daily smokers may aid in tailoring specific interventions.

Introduction

Research suggests that nondaily smokers constitute a significant proportion of cigarette smokers (Hennrikus, Jeffrey, & Lando, 1996). A deeper understanding of tobacco use among such smokers is needed because they are heterogeneous (Wortley, Husten, Trosclair, Chrismon, & Pederson, 2003) and probably differ in many ways from daily and heavy smokers. The results of the 1990 California Tobacco Survey indicated that, of those who had smoked at any time during the year before the interview, 15.4% were nondaily smokers (Evans et al., 1992). Other studies yielded similar findings: 7% of physicians in Jordan and 7.1% of health professionals in Saudi Arabia (World Health Organization [WHO], 2005), 20% of Finnish smokers (Luoto, Utela, & Puska, 2000), and 7% of a population sample in Canada (Goldstein, 1991).

Smoking behavior usually follows established theories of addiction (Hennrikus et al., 1996). This means that some nondaily smokers are either new smokers or preparing for smoking cessation by cutting down. If nicotine dependence involves the maintenance of physiological nicotine levels, then nondaily smokers should be rare. This is clearly not the case, which implies that not all smokers become dependent (Shiffman, Fischer, Zettler-Segal, & Benowitz, 1990).

In Egypt, few studies on nondaily cigarette smokers have been reported. In a survey in Cairo in 1982, the prevalence of smoking was 39.8% and 1.0% among men and women, respectively (Gomma, 1982). An estimated 15.7 million Egyptians smoke cigarettes (WHO, 2003), and the prevalence of smoking in Egyptian adult males was about 40% in 2000 (WHO, 2002). A national survey of tobacco use in Egypt in 2004 revealed that

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42.1% of adult males were current smokers (44.7% in rural areas and 39.5% in urban areas; Mohamed, M. K., unpublished data). A cross-sectional survey on tobacco use in the city of Alexandria, Egypt, found that 48.5% of men were current smokers and 2.9% of them were nondaily smokers (Youssef, Abou-Khatwa, & Fouad, 2002).

The present study attempted to fill gaps in knowledge on tobacco smoking behavior in Egypt. Better knowledge of light daily smoking and nondaily smoking behaviors will aid tobacco control efforts in Egypt and regionally as Egypt represents by far the largest population in the Middle East/North African region.

Method

The data in this study were gathered as part of the Community Trial for Prevention of Environmental Tobacco Smoke. Its goal was to provide a community-based intervention model that could be applied to other rural areas of the country, where much of the population resides. The intervention included schools, mosques, churches, primary health care centers, community health aides, and youth clubs.

Study sites

A baseline household survey was carried out in six villages in 2003, randomly selected from all villages that had 10,000–20,000 inhabitants, in two districts in Qalyubia Governorate in the Nile Delta region (25 km northeast of Cairo). All data for the present report came from this survey, prior to community randomization for the intervention. About 300 houses per village were selected through a systematic random sampling technique. Qalyubia Governorate was chosen because it is highly accessible to health officials, who assessed the intervention model. In addition, the Center for Field and Applied Research (CFAR) of the Ministry of Health and Population in Qalyubia, whose personnel implemented the study, has 50 years of experience in conducting epidemiological research in rural communities.

Eligible population

All household members aged 18 years or older were invited to participate in the study. Those who accepted signed or had a witness to sign an informed consent form. Of the 7,657 adult participants, 48.6% were male and 51.4% were female. Among them, 1,401 males (37.6%) and 5 females (0.1%) were current cigarette smokers; further analysis focused solely on males. A precoded questionnaire was administered by trained social workers from CFAR. It asked about the demographic characteristics of the surveyed participants (age, sex, education, occupation, and marital status), pattern of tobacco use (cigarettes and/or water pipe), and secondhand smoke exposure in the household and workplace.

Definitions used

The WHO's standard definitions state that respondents who report smoking at the time of the survey, or "current smokers," should be further categorized as "daily" or "occasional" smokers. Daily smokers are individuals who smoke any tobacco product at least once a day, including those who smoke every day except days of religious fasting. Occasional smokers are individuals who smoke any tobacco product but not every day (WHO, 1998). This definition also was used to classify smokers in an earlier Egyptian study (Youssef et al., 2002).

Light versus moderate-to-heavy daily smokers. Those who ever smoked 100 cigarettes, and smoked daily in the past 30 days, were considered current daily smokers. Light daily smokers were defined as those who smoked no more than 10 cigarettes/day. This cutpoint is based on available information about the level of cigarette consumption necessary for nicotine regulation (Shiffman, 1989). Also Benowitz, Jacob, Kozlowski, and Yu (1986) found that moderate-to-heavy smokers reported no difficulty in reducing consumption to 15 cigarettes/day but had difficulty when asked to reduce to 10 cigarettes/day.

Nondaily smokers. Those who ever smoked 100 cigarettes, and smoked on no more than 25 days in the previous 30 days, were classified as nondaily smokers. Evans et al. (1992) found that, using this definition, the proportion of nondaily smokers seemed to stabilize 3 years after initiation of smoking. Accordingly, we focused on smokers who had been smoking for at least 3 years to be sure that these smokers were not in a transitional phase.

Sample recruitment

The total of 7,657 subjects who completed the baseline questionnaire represented contact rates of 88.9% (845 houses) of the target houses in the intervention villages and 91.3% (928 houses) in the control villages. There were 11 household refusals (1.3%) in the intervention and 8 (0.9%) in the control villages.

Data analyses

The questionnaires were double entered using Microsoft Access. Data were analyzed using SPSS for Windows, release 13.0. Logistic regression analysis yielded odds ratios (*OR*s) and 95% *CI*s to assess associations between the three groups of smokers and the categorical variables, using moderate-to-heavy smokers as the common reference group. We used *t* tests to assess differences in continuous variables.

Results

Nondaily smokers constituted 6.2% ($n=87$) of male current cigarette smokers, and daily smokers constituted 93.8% ($n=1,314$). Daily smokers were subdivided into light smokers ($n=376$, 26.8%) versus moderate-to-heavy daily smokers ($n=938$, 67.0%). Half of nondaily smokers (52.9%, $n=46$) smoked 1–5 cigarettes/day. A stable pattern of smoking for at least 3 years was reported by 48.3% ($n=42$) of nondaily smokers and by 59.5% ($n=223$) of light daily smokers. Further analysis focused on the group of smokers with such a stable pattern of consumption.

Table 1 shows the distributions of socioeconomic variables in the three groups. Relative to moderate-to-heavy smokers, the age distribution was shifted toward younger ages in the nondaily smoker group ($OR=4.0$, 95% $CI=1.6–10.3$, for those 18–24 years old), whereas the light daily smokers were significantly less likely than moderate-to-heavy smokers to be in the age groups of 18–24 or 25–44 years ($OR=0.6$ and 0.5, respectively); 40% of light daily smokers were more than 45 years old. Not surprisingly, given their younger ages, the nondaily smokers tended to be unmarried ($OR=2.8$, 95% $CI=1.4–5.3$). Paradoxically, they

Table 1. Social and demographic characteristics of a sample of male smokers in Egypt

	Nondaily smokers ($n=42$)					Light daily smokers ($n=223$)					Heavy smokers[a] ($n=769$)	
	n	%	*OR*	95% *CI*		*n*	%	*OR*	95% *CI*		*n*	%
Age (years)												
18–24	14	33.3	4.0	1.6	10.3	25	11.2	0.6	0.3	0.9	99	13.3
25–44	21	50.0	1.5	0.6	3.2	108	48.4	0.5	0.4	0.8	444	59.8
>45	7	16.7	ref.			90	40.3	ref.			200	26.9
Total	42	100				223	100				743	100
Marital status												
Single	15	35.7	2.8	1.4	5.3	41	18.4	1.1	0.8	1.6	129	16.8
Ever married	27	64.3	ref.			182	81.6	ref.			639	83.2
Total	42	100				223	100				768	100
Education												
Illiterate	7	16.7	ref.			66	29.6	ref.			244	31.7
Primary	13	31.0	1.4	0.5	3.5	88	39.5	1.0	0.7	1.4	326	42.4
Secondary	22	52.4	3.9	1.6	9.2	69	30.9	1.3	0.9	1.9	199	25.9
Total	42	100				223	100				769	100
Occupation												
Unskilled laborer	19	46.3	ref.			118	53.2	ref.			455	59.7
Does not work	4	9.8	1.8	0.6	5.6	34	15.3	2.5	1.6	4.1	52	6.8
Skilled laborer	6	14.6	1.1	0.4	2.8	30	13.5	0.9	0.6	1.4	133	17.5
Professional	12	29.2	2.4	1.1	5.0	40	18.0	1.3	0.8	1.9	122	16.0
Total	41	100				222	100				762	100

Note. *n*, number of subjects and *OR*, odds ratio.

[a]Moderate-to-heavy daily smokers are the reference group.

also had the highest levels of education of the three groups and a higher prevalence of professional occupation ($OR=3.9$ for secondary school completion and 2.4 for professional occupation). Light daily smokers did not differ statistically from moderate-to-heavy daily smokers on marital status and education, but they were more likely to be unemployed ($OR=2.5$, 95% $CI=1.6$–4.1). Nondaily and light daily smokers began smoking at slightly older ages ($M=18$ and 18.6 years, respectively) than moderate-to-heavy smokers ($M=16.6$ years, $p<.001$; data not shown), whereas the duration of smoking (years) was similar across the three groups.

Table 2 shows aspects of tobacco smoking behaviors and attitudes toward quitting in the three groups. Substantially greater proportions of nondaily (73.2%) and light daily smokers (57.0%) reported plans to quit during the next month ($OR=3.2$ and 1.6, respectively) compared with moderate-to-heavy smokers (45.8%), and they believed that they would be successful when they attempted to quit ($OR=7.9$ and 3.0, respectively). The prevalence of current water pipe use was similar across the groups. Nondaily and light daily smokers were less likely than moderate-to-heavy smokers to report smoking in the presence of children in the same room or another room at home, as opposed to smoking outside, and the magnitudes of these associations were similar. Always or sometimes smoking in the presence of their wife at home (compared with rarely or never) was less likely to be reported by nondaily and light daily smokers than by moderate-to-heavy smokers. We found no statistically significant differences concerning smoking while using transportation services, although this behavior tended to be less prevalent in the nondaily and light daily smokers.

Discussion

This study demonstrates that nondaily cigarette smokers and light daily smokers differ in several important characteristics from moderate-to-heavy daily smokers. Sociodemographic characteristics varied markedly between these groups of male smokers. Nondaily smokers tended to be younger, single, more highly educated, and more likely to have professional occupations compared with moderate-to-heavy smokers. Light daily smokers resembled moderate-to-heavy smokers on sociodemographic characteristics, except for having a greater proportion of ages more than 45 years. These results are consistent with data obtained from the 1993 National Health Survey of Spain, in which nondaily smokers constituted 9.9% of current smokers, and the behavior was more prevalent among young smokers (Diez-Ganan et al., 2002). Similarly, the results of the 1991 National Health Interview Survey in the United States showed that nondaily smoking was significantly more common among younger people and among those with at least 16 years of education (Husten, Giovino, Chrismon, & Zhu, 1998). In the present study, a stable pattern of smoking for at least 3 years was reported by 48.3% of nondaily smokers and by 59.5% of light daily smokers. These rates are higher than would be expected if nondaily and light daily smoking represented only a transient stage in the pathway to addiction. This observation is consistent with findings of Zhu, Sun, Hawkins, Pierce, and Cummins (2003), who examined the stability of smoking patterns in California during 1990–1996 and found that 82% of regular smokers and 44% of nondaily smokers retained their smoking status after 20 months of follow-up.

Table 2. Smoking behaviors and attitudes toward quitting among male smokers in Egypt

	Nondaily smokers					Light daily smokers					Heavy smokers[a]	
	n	%	*OR*	95% *CI*		*n*	%	*OR*	95% *CI*		*n*	%
Plans to quit smoking												
Yes	30	73.2	3.2	1.6	6.5	127	57.0	1.6	1.2	2.1	352	45.8
No	11	26.8	ref.			96	43.0	ref.			417	54.2
Total	41	100				223	100				769	100
Ability to quit smoking when they wish												
Yes	37	97.4	7.9	1.1	57.9	185	93.4	3.0	1.7	5.5	550	82.5
No	1	2.6	ref.			13	6.6	ref.			117	17.5
Total	38	100				198	100				667	100
Ever smoked water pipe												
Yes	21	50.0	1.1	0.6	2.0	85	38.1	0.7	0.5	0.9	370	48.2
No	21	50.0	ref.			138	61.9	ref.			398	51.8
Total	42	100				223	100				768	100
Currently smoking water pipe												
Yes	6	28.6	2.2	0.8	5.9	15	17.6	1.2	0.6	2.2	57	15.4
No	15	71.4	ref.			70	82.4	ref.			313	84.6
Total	21					85					370	
Smoking in presence of children[b]												
Outside the house	8	30.8	ref.			30	17.3	ref.			45	7.5
Same room	6	23.1	0.2	0.1	0.3	50	28.9	0.2	0.1	0.4	311	51.5
Another room	12	46.2	0.3	0.1	0.7	93	53.8	0.6	0.3	1.0	248	41.1
Total	26	100				173	100				604	100
Smoking in presence of wife[b]												
Rarely/never	17	63.0	ref.			86	49.7	ref.			200	31.9
Always	6	22.2	0.3	0.1	0.8	38	22.0	0.4	0.3	0.6	235	37.5
Sometimes	4	14.8	0.3	0.1	0.8	49	28.3	0.6	0.4	0.9	191	30.5
Total	27	100				127	100				626	100
Smoking in transport during the past month												
No	38	90.5	ref.			197	88.3	ref.			631	82.1
Yes	4	9.5	0.5	0.2	1.4	26	11.7	0.6	0.4	1.0	138	17.9
Total	42	100				223	100				769	100

Note. *n*, number of subjects and *OR*, odds ratio.

[a]Moderate-to-heavy daily smokers are the reference group.

[b]Subset of males currently married and/or having children.

Nondaily and light daily smokers may benefit from cessation interventions, as suggested by our finding that more than half of the respondents in these groups had planned to quit within the next month. Similarly, Evans et al. (1992) found that 40% of nondaily smokers and only 24% of daily smokers planned to quit in the next month. Owen, Kent, Wakefield, and Roberts (1995) reported that light smokers were more likely than heavier smokers to be in the preparation stage for quitting. Although we did not assess stages of quitting, we did find that the vast majority of nondaily and light daily smokers believe that they will be able to quit. They also had a significantly higher prevalence of past quit attempts compared with daily smokers (data not shown). These results are consistent with a survey of 484 U.S. Black smokers, in which motivation and confidence to quit were higher among nondaily and light smokers than among other daily smokers (Okuyemi et al., 2004).

Several limitations of the study should be noted. The population was rural and may not be generalizable to urban male smokers in Egypt. This cross-sectional survey did not monitor population trends and changes in smoking patterns in subjects over time. We did not assess nicotine dependence status, which might have provided additional insights. Longitudinal studies with detailed smoking history are needed to better understand the different patterns and transitional phases of smoking.

In summary, our survey of a large, randomly selected sample of male cigarette smokers in a rural area of Egypt documents that substantial proportions of cigarette smokers are engaged in either nondaily or light daily smoking. The nondaily smoker group is distinguished by its youthfulness, higher education levels, and interest and self-confidence in quitting. This interest in cessation should be capitalized upon in designing future tobacco control efforts.

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Declaration of Interests

None declared.

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